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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,642	06/22/2001	J. Scott Buchanan	2001B052	7135

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EXAMINER

STOCKTON, LAURA LYNNE

ART UNIT PAPER NUMBER

1626

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/887,642

Applicant(s)

BUCHANAN ET AL.

Examiner

Laura L. Stockton, Ph.D.

Art Unit

1626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 55 and 56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 55 and 56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-13, 55 and 56 are pending in the application.

Continued Prosecution Application

The request filed on September 22, 2003 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/887,642 is acceptable and a CPA has been established. An action on the CPA follows.

Drawings

The receipt of Formal drawings filed September 22, 2003 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13, 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buysch et al. {U.S. Pat. 4,434,105} and Chem Systems "Developments in Dimethyl Carbonate Production Technologies" 99/00S6, May 2000, each taken alone or in combination with each other.

Determination of the scope and content of the prior art (MPEP §2141.01)

Applicants claim a process of making dialkyl carbonate and a diol (e.g., ethylene glycol) from alkylene oxide (e.g., ethylene oxide), carbon dioxide and an aliphatic monohydric alcohol (e.g., methanol and ethanol) comprising (a) reacting an alkylene oxide with carbon dioxide in the presence of a homogeneous carbonation catalyst (e.g., quaternary ammonium halides and alkali halides) to provide a crude cyclic carbonate and (b) reacting said cyclic carbonate with an aliphatic monohydric alcohol in the presence of said homogeneous carbonation catalyst.

Buysch et al. '105 teach a process of making dialkyl carbonate (e.g. dimethyl carbonate) and a diol (e.g., glycol) by reacting alkylene oxides

(e.g., ethylene oxide) with aliphatic and/or cycloaliphatic alcohols (e.g., methanol) and carbon dioxide in the presence of catalysts, such as sodium iodide, thallium carbonate, tetraethylammonium bromide or mixtures thereof (column 1, lines 45-68; column 2, lines 34-38 and lines 60-68; column 3, lines 1-23; and Examples 1, 11 and 12).

Chem Systems 99/00S6 (May 2000) {pages 26-31} teach a process of making dialkyl carbonate (e.g., dimethyl carbonate) and a diol (e.g., ethylene glycol) from alkylene oxide (e.g., ethylene oxide), carbon dioxide and an aliphatic monohydric alcohol (e.g., methanol) comprising (a) reacting an alkylene oxide with carbon dioxide in the presence of a homogeneous carbonation catalyst (e.g., tetraethylammonium bromide and potassium iodide) to provide a crude cyclic carbonate and (b) reacting said cyclic carbonate with an aliphatic monohydric alcohol (e.g., methanol) in the presence of said homogeneous carbonation catalyst, such as a quaternary ammonium halides and alkali halides.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the process of Buysch et al. '105 and the process instantly claimed is that Buysch et al. '105 teach the addition of all ingredients at once instead of sequentially as instantly claimed.

The difference between the process of Chem Systems 99/00S6 (May 2000) and the process instantly claimed is that of overlapping pressure ranges.

Finding of prima facie obviousness--rational and motivation (MPEP §2142-2413)

The addition of ingredients sequentially, as instantly claimed, instead of simultaneously, as taught in Buysch et al. '105, is *prima facie* obvious because one skilled in the art would expect to obtain a dialkyl carbonate and a diol.

In regard to the Chem Systems 99/00S6 (May 2000) reference, the optimization of variables, such as pressure ranges, temperature ranges and molar ratios, in a known process is *prima facie* obvious. The rationale is discussed in *In re Boesch*, 205 USPQ 215 (1980).

One skilled in the art would have been motivated to utilize the processes taught by the above cited prior art to arrive at the instant claimed process with the expectation of obtaining a dialkyl carbonate and a diol.

Since each of the above cited references teach similar processes, the combination of these references would also teach Applicants' claimed invention. The instant claimed process would have been suggested to one skilled in the art and therefore, the instant claimed process would have been obvious to one skilled in the art.

Response to Arguments

Applicants' arguments filed September 22, 2003 have been fully considered. Applicants argue that a *prima facie* case of obviousness has not been established. Applicants argue that the cited references, taken either alone or in combination with each other, fail to teach or suggest all of the limitations in claims 1, 55 and 56.

All of Applicants' arguments have been considered but have not been found persuasive. Applicants claim a process of making dialkyl carbonate and a diol (e.g., ethylene glycol) from alkylene oxide (e.g., ethylene oxide), carbon dioxide and an aliphatic monohydric alcohol (e.g., methanol and ethanol) comprising (a) reacting an alkylene oxide with carbon dioxide in the presence of a homogeneous carbonation catalyst (e.g., quaternary ammonium halides and alkali halides) to provide a crude cyclic carbonate and (b) reacting said cyclic carbonate with an aliphatic monohydric alcohol in the presence of said homogeneous carbonation catalyst.

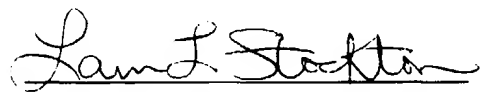
Buysch et al. '105 and Chem Systems each teach similar processes of making dialkyl carbonate and a diol. The differences over the prior art processes and the instant claimed process have been discussed above. A *prima facie* case of obviousness has been established. Applicants have not demonstrated in a side-by-side showing of unexpected, beneficial and superior results of the instant claimed process over the processes taught

in the prior art. Absent such showing, the instant claimed invention is found to have been obvious to one of ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura L. Stockton whose telephone number is (703) 308-1875. The examiner can normally be reached on Monday-Friday from 6:00 am to 2:30 pm. If the examiner is out of the Office, the examiner's supervisor, Joseph McKane, can be reached on (703) 308-4537.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1235.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

A handwritten signature in cursive script, reading "Laura L. Stockton".

Laura L. Stockton, Ph.D.
Patent Examiner
Art Unit 1626, Group 1620
Technology Center 1600

December 1, 2003